A Prospective Bicenter Study Investigating the Diagnostic Value of Procalcitonin in Patients with Acute Appendicitis.

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Background: Procalcitonin (PCT) is an established laboratory marker for disease severity in patients with infection and sepsis. In addition, PCT has been shown to be an effective marker for a limited number of localized infections. However, whether or not PCT has any diagnostic value for acute appendicitis, still remains unclear. The purpose of this prospective bicenter study was, therefore, to determine whether or not the PCT levels in the serum of patients with acute appendicitis have any diagnostic value. Methods: This prospective study included 103 patients who received an appendectomy, based on the clinical diagnosis of acute appendicitis, in a surgical department of an academic teaching hospital in Germany or in a county hospital in Spain. White blood cell count (WBC), C-reactive protein (CRP) and procalcitonin (PCT) values were determined preoperatively. All appendectomy specimens were sent for routine histopathological evaluation. Based on this information, the patients were assigned to 1 of 5 groups that reflected the severity of the appendicitis. Results: Of the 103 patients who were included in the study, 98 had appendicitis. Fourteen (14.3%) showed an increase in PCT values. Of those 14, 4 had a serum PCT >0.5 ng/ml, 9 had a PCT value >2-10 ng/ml and 1 had a PCT value >10 ng/ml. The sensitivity of PCT was calculated to be 0.14. The mean WBC value was 13.0/nl (+/- 5.2, 3.4-31), and for CRP it was 8.8 mg/dl (+/- 13, 0-60.2). The values of CRP, WBC and PCT increased with the severity of the appendicitis. Conclusions: PCT is potentially increased in rare cases of severe inflammation and, in particular, after appendiceal perforation or gangrenous appendicitis. However, its remarkably low sensitivity prohibits its routine use for the diagnosis of appendicitis.

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